

part of the continent and there came with it warm, moist winds and stormy weather.

The weather was warm from the 1st to the 9th and again on the 30th and 31st (means of maxima and minima 22.5°C. and 9.1°C. , normals 17.6°C. and 7.0°C.), while the remainder of the month was cold, chiefly at night due to intense radiation (means of maxima and minima 16.9°C. and 4.8°C. , normals 19.2°C. and 8.2°C.). For the entire month the means of maxima and minima were 18.9°C. and 6.3°C. (normals 18.7°C. and 7.8°C. , respectively). The highest temperature, 25.7°C. , was recorded on the 4th and again on the 7th, the lowest temperature was -1.5°C. on the 12th. This freeze and the frequent white frosts were extremely damaging. In general, there was little cloudiness; the total number of hours of sunshine was 222 (normal 220). The first and second decades were especially sunny.

The precipitation was light; the 10 days with measurable amount gave only 34 mm. (normal 57 mm.), 24 mm. falling on the 30th and 31st. Toward the close of the month the dryness had become distressing to agriculture.—*Transl. W. W. R.*

SOLAR RADIATION AND RAINFALL IN THE SOUTHERN REGION OF CHILE

By JULIO BUSTOS NAVARRETE, Director

[El Salto Observatory, Sanitago, Chile, May, 1927]

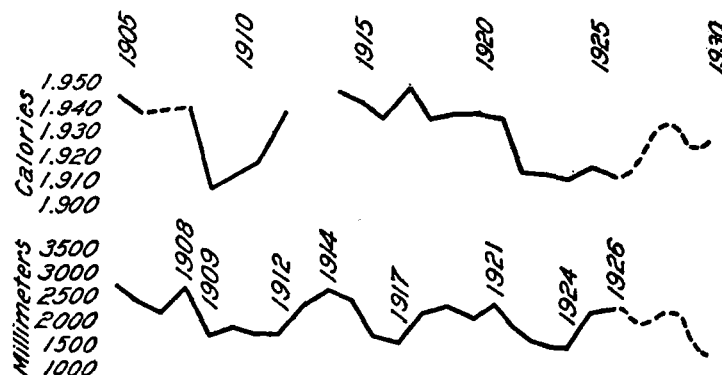
* * * In our investigations we have constructed two graphs; one showing solar activity and rainfall from 1850 to 1926 and another showing solar radiation and rainfall from 1905 to 1926. The second graph, notwithstanding the fact that it relates to a shorter period, is the more interesting in that it contains exact data on solar radiation, measured in calories, and complete observations, without break in continuity, of rainfall at Valdivia.

From the year 1900 to date there has been observed a periodicity of 7 to 10 years in the rainfall of the southern region of Chile. The most important minima occurred in 1903, 1909–1912, 1917, and 1924. The maxima, however, have a march somewhat less regular, yet they, too, present a visible periodicity, the most important of the maxima being observed in 1908, 1914, 1921, and 1926 or 1927. The period appears to be a little shorter on resolving some maxima into two secondary maxima as is observed in the "double" period of the central region of Chile.

In our graph of solar radiation and rainfall in the southern region of Chile from 1905 to 1926 there can be clearly observed a manifest relation between the annual variation (variation from year to year) of solar radiation and that of rainfall at Valdivia. The minimum (of solar radiation) in 1909 coincides with a rather marked minimum of rainfall in the same year and this (condition) continues in the years (immediately) following; the maximum of 1914 coincides with a maximum of rainfall in the same year. The secondary (minimum) fall in 1916 produced, however, an exaggerated effect, the two years 1916 and 1917 being relatively dry; the increased radiation from 1917 to 1921 marks another (a new) rainy period that is well defined; the minimum of 1923 and 1924 coincides with a well marked minimum of rainfall; and, finally, the increase in solar radiation recently observed coincides, also, with the increase in rainfall in the southern region.

At present the southern region is in a period of rainy years, brought on, fundamentally, by this last increase

in solar activity. In the accompanying graph we have prolonged the curves of solar radiation and rainfall, according to their probable course, up to the year 1930. As is seen, the rainfall will diminish a little in 1927 or 1928, increase again in 1928 or 1929, and then diminish in 1930, in which year there will begin, perhaps, a period of relative dryness.



These conclusions, however, are altogether provisional since it will be necessary to determine the mean of solar radiation in 1927 in order to estimate the increase that has recently begun and to (appraise) its consequences relative to the rainfall in the southern region of Chile. (However, it may be said that) the results obtained thus far are of sufficient value to afford us each year an indication (index) of the probabilities of the next winter—*Transl. W. W. Reed.*

METEOROLOGICAL SUMMARY FOR BRAZIL, MAY, 1927

By J. DE SAMPAIO FERRAZ, Director

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The secondary circulation in this month over the meridional and central parts of South America was particularly abnormal owing to a marked activity of depressions which reduced the usual frequency of highs.

The first anticyclone of the month was already full fledged and in march to the northeast when low pressures set in, dividing the high in two sections. This area of low pressure developed a fairly deep secondary along the coast, producing high winds especially in the River Plate and Southern Brazil.

The second HIGH, which was really a return of the western section of the previous anticyclone, brought the first frosts of the season between the 12th and 14th. About this period a high-latitude depression passed by causing fresh winds in the River Plate and southern Brazil. A new HIGH dominated the continent up to the 19th. From this date till the 26th, low pressures set in again with high winds in southern Brazil and in Argentina. On the 27th was registered the advancement of the last anticyclone of the month with accentuated decline of temperature.

In a general way, rainfall was decidedly below normal throughout the country. In the south precipitation followed low pressures and contact between these and high pressures, but much less than was expected.

Rio de Janeiro had a normal month except rainfall which was below the usual value. On the 13th a stiff southwest wind was felt at night.

Crops generally doing well and better than could be expected with the marked deficiency of rainfall everywhere.